
# New England Common Assessment Program

## Released Items
## 2009

## Grade 8
## Reading

# Reading

The dart hit the bull's-eye precisely in the center.

**1** What does the word precisely mean as it is used in the box?

A. exactly
B. scarcely
C. powerfully
D. convincingly

**2** The prefix *inter-* in the words intermission and interview means

A. between.
B. connected.
C. beneath.
D. thorough.

*Read this article about a surprising use of X-rays. Then answer the questions that follow.*

## X-ray Detectives

*Carla Killough McClafferty*

1 Some wonderfully creative uses of X-rays have been in the world of art. X-rays themselves have influenced artists. According to an article in *Art Journal*, a group of artists in the early twentieth century known as cubists may have been partly inspired by the X-ray images they saw. Their abstract painting sometimes showed the interior of solid objects in a way similar to the way X-rays revealed hidden structures. Some of these artists used light and shadow to create skeletonlike shapes that resemble X-rays.

But the most impressive use of X-rays in art is to uncover what has been covered up. Details revealed by an X-ray of a painting can't be seen any other way. For example, in the past, paintings were often repaired if flakes of paint fell off the canvas. These repairs cannot be seen just by looking at the painting. It takes an X-ray to detect where the repairs have been made.

An X-ray of a painting is one of the best ways to tell if it was created by a famous painter or if it is a forgery. If there is a question as to whether an old master has painted a certain painting or not, X-rays are made and compared to those of paintings that are known to be genuine. If the brushstrokes, for example, are shown to be totally different than in other work done by a certain artist, then the painting is proved to be a fake.

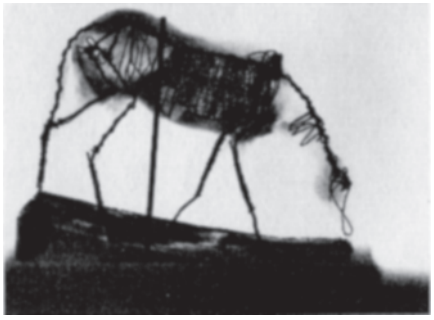
4 Since modern paints are usually made from different materials than paints of hundreds of years ago, the image they leave on an X-ray film looks different. This is one way X-rays can be used to detect a forgery. A modern artist will try to make a forgery look hundreds of years old by painting dirty varnish on it or by using artificial means to get the varnish to look cracked. To the naked eye the forgery may look old, but when a careful study of the X-ray image is made, the deception is obvious.

It was common many years ago for an artist to finish a painting, decide it wasn't any good, and paint a completely different picture on top of it. Or artists would paint over others' work—it was their version of recycling. Taking an X-ray is the only way to find out if there is a picture underneath the picture you see with your eyes. Sometimes museums will be more interested in the painting beneath than the one on top, and will restore the older one by having the top layer painstakingly removed.

Forgeries of rare postage stamps, like paintings, have been detected by using X-rays. Resulting films can show details such as the design of the stamp, the type of paper used, the cancellation mark, and any alterations that might have been made.

Pieces of sculpture can also be examined by X-rays to see if they are forgeries. An X-ray film of a statue can indicate how the statue was made. If the method used by the artist was one that did not exist when the statue was supposed to have been made, it is proved to be a fake. For example, a statuette of an Egyptian cat

was thought to be thousands of years old until an X-ray image showed it was made of material that would not have been used by ancient Egyptians. X-rays help people study sculptures in other ways, too. If a metal object is covered with corrosion, an X-ray can show the actual shape of the original piece. X-rays also reveal repairs that have been made in the past that can't be seen with the eyes.



**LEFT:** One of the earliest horse sculptures by Edgar Degas, *Horse at Trough*, from the early 1860s. The figure has been formed from brown wax with red highlights and rests on a wooden base. Degas's attention to detail can be especially seen in the horse's mane, mouth, and nostrils.

**RIGHT:** An X-ray of the same sculpture shows that this attention to detail began on the inside. Degas built an intricate, almost lifelike, metal skeleton by wrapping and twisting wire before he began sculpting with wax. You can also see the nails he used to build the wooden base. Without the benefit of X-rays, we'd never be able to see the inner support for this work of art without destroying it.

**8** X-rays' uses aren't limited to the visual arts; they are also used in the world of music. X-ray images have made it possible to understand how the internal structures of the mouth and nose work together. This information has helped professionals perfect the mouthpieces of brass instruments so musicians can achieve the best sound.

CT (computed tomography) scans have also been used to study musical instruments. A CT scanner is a complicated X-ray machine that takes many images of an object one thin slice at a time. To better understand this imaging method, think of a loaf of sliced bread. If you took one slice of bread out of the middle of the loaf, you would see what the inside of the loaf looked like at that one exact place. A CT scan enables doctors and researchers to look at numerous cross sections (the "slices") of an object in order to evaluate the whole thing (the "loaf").

Dr. Steven Sirr, a radiologist in Minneapolis, Minnesota, performs CT scans on more than his patients. He also takes these X-ray images of Stradivarius violins. The world-famous violins were made more than two hundred fifty years ago and are still considered to be the best in the world. His scans show wormholes, cracks, and even areas that were patched long ago. The films also give instrument makers a glimpse into the construction skills of the master violin makers of the past.

3 In the first paragraph, which information suggests that X-rays may have influenced artists?

A. They used reverse images.
B. They showed inside views of subjects.
C. They used black and white paint.
D. They showed outline images of subjects.

4 In paragraph 4, the word <u>deception</u> means

A. comparison.
B. openness.
C. trickery.
D. design.

5 What does the reader learn from the pictures and text in the box?

A. that Degas disguised the base in a surprising way
B. why a metal skeleton forms a good sculpting base
C. the details of a genuine sculpture that was X-rayed
D. how Degas's sculpture was affected by corrosion

6 In paragraph 8, the word <u>perfect</u> means to

A. insure.
B. continue.
C. extend.
D. improve.

7 Explain how X-rays can be used to discover forgeries. Use information from the **entire** article to support your answer.

8 According to the article, how are X-rays and CT scans similar?

A. Both have influenced famous artists.
B. Both show the interior of an object.
C. Both have been used to reveal fake postage stamps.
D. Both have been used to repair musical instruments.

9 Why does the author compare a CT scan to a sliced loaf of bread?

A. to review the benefits of a CT scan
B. to show the reader how bread is like a musical instrument
C. to help the reader picture how a CT scan operates
D. to explain the difference between paintings and music

10 Which sentence from the article is an **opinion**?

A. "Some wonderfully creative uses of X-rays have been in the world of art."
B. "Pieces of sculpture can also be examined by X-rays to see if they are forgeries."
C. "X-rays also reveal repairs that have been made in the past that can't be seen with the eyes."
D. "His scans show wormholes, cracks, and even areas that were patched long ago."

11 What is the **main** purpose of the article?

A. to persuade art dealers to check for forgeries before selling art
B. to explain how modern technology can be used in unique ways
C. to provide information to detectives who are looking for stolen art
D. to help artists restore damaged artwork to its original appearance

12 Explain why "the most impressive use of X-rays in art is to uncover what has been covered up." Use information from the article to support your answer.

# Acknowledgments

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